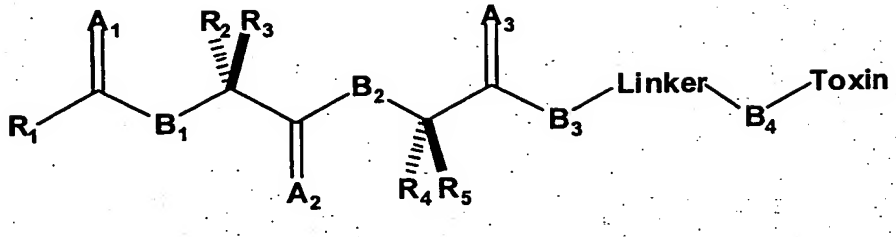
CLAIMS

We claim:

1. A compound having the structure:



wherein R_1, R_2, R_4, and R_5 are independently the same or different and are selected from the group consisting of hydrogen, a substituted or unsubstituted C_5-C_{14} aromatic or heteroaromatic (for example: phenylmethylene, 4-hydroxyphenylmethylene, imidazolemethylene, etc.); and a substituted or unsubstituted saturated or unsaturated C_1-C_6 alkyl (for example: methyl, ethyl, 3-hydroxypropyl, 3-aminopropyl, N-methyl-3-aminoethyl, 2-methoxyethyl, etc.);

wherein R_3 is selected from the group consisting of a substituted or unsubstituted aromatic or heteroaromatic (for example: phenylmethylene; triazolemethylene, thiophenemethylene, etc.), and a substituted or unsubstituted saturated or unsaturated C_1-C_6 alkyl (for example: ethyl, propyl, 2-hydroxyethyl, etc.) and $-CH_2-CH_2-X-CH_3$, wherein X is selected from the group consisting of O, S, NH, NR_6, and CH_2; where R_6 is a lower alkyl such as, for example, methyl or ethyl;

wherein A_1 and A_3 are independently the same or different and are selected from the group consisting of =O, =S, =NH, =N–OH, or =N–R_7, where R_7 is hydrogen or a C_1-C_6 alkyl such as, for example, methyl, ethyl, or methoxymethyl;

wherein A_2 is selected from the group consisting of =O, =S; =NH, =N–OH, =N–R_8, or =C(R_9)(R_{10}), wherein R_8, R_9, and R_{10} are independently the same or different and are selected from the group consisting of hydrogen or a C_1-C_6 alkyl such as, for example, methyl, ethyl, or methoxymethyl;

wherein B_1 is selected from the group consisting of – O –, – S –, –NH– or – N(R_{11})–, wherein R_{11} is selected from the group consisting of hydrogen and a C_1-C_6 alkyl such as, for example, methyl, ethyl, or methoxymethyl;

wherein B_2 is absent or is selected from the group consisting of – O –, – S –, – $N(R_{12})$–, or – $C(R_{13})(R_{14})$–, where R_{12}, R_{13}, and R_{14} are independently the same or different and are selected from the group consisting of hydrogen or a substituted or unsubstituted saturated or unsaturated C_1-C_6 alkyl (for example: methyl, ethyl, 3-hydroxypropyl, 3-aminopropyl, N-methyl-3-aminoethyl, 2-methoxyethyl, etc.), wherein when B_2 is –$N(R_{12})$– or – $C(R_{13})(R_{14})$– it can be additionally joined through R_{12}, R_{13} or R_{14} to R_4 or R_5 to form a cyclic structure; wherein the fragment –B_2-$C(R_4)(R_5)$-$C(=A_3)$ – in its entirety is proline or a proline derivative or analog,

wherein B_3 is absent or is selected from the group consisting of – O –, – S –, or – NH–, or – $N(R_{15})$–, wherein R_{15} is selected from the group consisting of hydrogen and a C_1-C_6 alkyl such as, for example, methyl, ethyl, or methoxymethyl;

wherein B_4 is absent or is selected from the group consisting of – O –, – S –, – $N(R_6)$–, and – $C(R_{16})(R_{17})$– and wherein R_{16} and R_{17} are independently the same or different and are selected from the group consisting of hydrogen or a substituted or unsubstituted saturated or unsaturated C_1-C_6 alkyl such as, for example, methyl, ethyl, or methoxymethyl;

wherein a Linker is absent or is a traceless linker;

and wherein a toxin is an agent that is toxic upon activation by an activating enzyme with the proviso that the toxin is not 5-fluorodeoxyuridine, or any derivative or analog thereof.

2. The compound of claim 1, wherein R_1 and R_2 are both hydrogen.

3. The compound of claim 2, wherein R_3 is –CH_2-CH_2-X-CH_3, wherein X is selected from the group consisting of oxygen, sulfur or methyl.

4. The compound of claim 3, wherein X is sulfur or oxygen.

5. The compound of claim 4, wherein A_1 and A_2 are both oxygen.

6. The compound of claim 5, wherein B_1 is –NH.

7. The compound of claim 1 wherein the linker is selected from the group consisting of C_6H_4-CH_2- and -C_6H_4-CH_2-X_1-C(=X_2)- wherein X_1 and X_2 are independently the same or different and are selected from the group consisting of –O-, –S – and -N(R_a), and where R_a is –hydrogen or a lower alkyl; and -$(CH_2)_n$ – NR_b-(C=O)- wherein n = 2 or 3 and R_b is hydrogen or a lower alkyl.

8. The compound of claim 7, wherein B_4 is absent.

9. The compound of claim 8, wherein the toxin is selected from the group consisting of 2-mercaptopyridine-N-oxide, ciprofloxacin, norfloxacin, nitrogen mustard and the derivatives, analogues and pharmaceutically acceptable salts thereof.

10. The compound of claim 9, wherein B_2 is –NH, B_3 is –O-, R_4 is 2-methyl-propyl and R_5 is hydrogen.

11. The compound of claim 9, wherein the toxin is norfloxacin or a derivative, analog or pharmaceutically acceptable salt thereof.

12. The compound of claim 1, wherein the compound is purified.

13. A composition comprising the compound of claim 1 and a carrier.

14. The composition of claim 13, wherein the carrier is a pharmaceutically acceptable carrier.

15. A method for inhibiting the growth of a microorganism, comprising contacting the microorganism with an effective amount of the compound of claim 1.

16. A method for treating a subject comprising administering to the subject an effective amount of the compound of claim 1.

17. A method for identifying potential therapeutic agents, comprising:

(a) contacting a microorganism with a compound of claim 1 under conditions that favor the incorporation of the compound into the microorganism; and

(b) assaying for amount of proliferation of microorganism in comparison to an untreated sample of the microorganism.